



**Optus Submission to  
Australian Competition and Consumer Commission  
in response to the  
Proposed Variation to the DTCS Service Description**

**Public version**

**January 2010**

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## **1. Introduction**

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- 1.1 In November 2009, the Australian Competition and Consumer Commission (the Commission) commenced a public inquiry into whether the service description for the declared Domestic Transmission Capacity Service (DTCS) should be varied. The intention of the proposed variation is to ensure the declaration is technology-neutral with respect to technologies currently deployed or in use. In addition, a minimum data rate is proposed which would apply to all DTCS services regardless of technology used.
- 1.2 Optus broadly supports the proposed variation to the DTCS service description. Ethernet protocols are in widespread use in the Australian transmission network and Ethernet is emerging as the dominant standard. Optus considers that it is appropriate that the Commission act to ensure Ethernet is not excluded from the DTCS service description.
- 1.3 Optus submits that the Commission should also consider making further clarifications which relate to the calculation of bandwidth and a proposed restriction of the declaration to point to point transmission services delivered over a layer 2 Ethernet interface.
- 1.4 Optus submits that the Commission's proposed variation will promote competition and encourage the efficient use of and investment in infrastructure.

## 2. Background

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### The declared service

- 2.1 The current DTCS service description describes DTCS as a generic service that can be used for the carriage of voice, data or other communications using wideband or broadband carriage (over a minimum bandwidth of 2 Mbps).<sup>3</sup>
- 2.2 Using the DTCS service, carriers/carriage service providers (CSPs) can use this transmission capacity to set up (or supplement) their own networks for aggregated voice or data channels, or for integrated data traffic. In particular, backhaul transmission networks have an important role in the connectivity of central points in the access network (such as telephone exchange, HFC hub or mobile tower) to other parts of the network.<sup>4</sup>
- 2.3 The range of declared transmission capacity services available include:
- inter-capital transmission;
  - ‘other’ transmission (for example, capital-regional routes);
  - inter-exchange local transmission; and
  - tail-end transmission
- 2.4 However following Telstra’s DTCS exemption applications a number of these routes have been exempted and this is reflected in the current DTCS service description.
- 2.5 There are a number of fixed network providers operating backhaul, and other transmission networks in Australia. Telstra and Optus operate extensive backhaul transmission networks. Other providers including AAPT, Amcom, Ergon, Nextgen, PIPE Networks, Primus, QLD Rail and Soul operate backhaul networks in metropolitan and regional areas across Australia.<sup>5</sup>

### The proposed variation to the DTCS service description

- 2.6 The current DTCS service description implicitly includes transmission services that operate using PDH and SDH technology interface protocols, which have been implied in the form of the stated bandwidth in the current definition where:

*“a **designated rate** is a transmission rate of 2.048 Megabits per second, 4.096 Megabits per second, 6.144 Megabits per second, 8.192 Megabits per second, 34 to 35 Megabits per second, 140/155 Megabits per second (or higher orders)”<sup>6</sup>*

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<sup>3</sup> ACCC, *Domestic transmission capacity service*, DTCS Declaration, Final Report, March 2009, p.3

<sup>4</sup> ACCC, *Communications infrastructure and service availability 2008*, 2008, p.14

<sup>5</sup> ACCC, *Communications infrastructure and service availability 2008*, 2008, p.14

<sup>6</sup> ACCC, *Domestic transmission capacity service*, DTCS Declaration, Final Report, March 2009, p.41

- 2.7 In particular, the stated bandwidths allude to the following services as summarised in the table below.

Stated bandwidth	Technology protocol	Common channel reference
2.048 Mbps	PDH	E1 channel
4.096 Mbps	PDH	Two E1 channels
6.144 Mbps	PDH	Three E1 channels
8.192 Mbps	PDH	Four E1 channels
34 to 35 Mbps	PDH	E3 channel
140/155 Mbps	PDH/SDH	E4 channel/STM-1 channel

- 2.8 Other data rates are also commonly used in Australia, which has led to the Commission’s view that the definition for the ‘designated rate’ should be amended “*to ensure that Ethernet services are included in the service description of the DTCS and to only specify a minimum data rate.*”<sup>7</sup>
- 2.9 The Commission’s proposed variation refers to a amendment in the current definition for the ‘designated rate’ such that:

*“a **designated rate** is a transmission rate of 2.048 Megabits per second or higher using Ethernet, PDH and SDH interface protocols.*

***Ethernet, PDH or SDH interface protocols** are either Ethernet, Plesiochronous Digital Hierarchy (PDH) or Synchronous Digital Hierarchy (SDH) interface protocols as established and amended from time to time by the International Telecommunications Union, Telecommunications Standardisation Sector (ITU-I) or the Institute of Electrical and Electronic Engineers (IEEE)”<sup>8</sup>*

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<sup>7</sup> ACCC, *Domestic transmission capacity service, DTCS Variation, Discussion Paper, November 2009, p.8*

<sup>8</sup> ACCC, *Domestic transmission capacity service, DTCS Variation, Discussion Paper, November 2009, p.9*

### 3. Implications of the proposed variation to the DTCS service description

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- 3.1 Optus broadly supports the proposed variation to the DTCS service description. However there are a number of further issues needing to be clarified, such as the calculation of bandwidth and potentially a clarification as to the layer at which regulation will apply.

#### Ethernet has emerged as an industry standard

- 3.2 Optus submits that the inclusion of Ethernet protocols in the DTCS service description is appropriate given they are in widespread use in the Australian transmission network, and Ethernet has emerged as a key standard in the market.
- 3.3 The ACMA has recognised a link between the growing demand for higher bandwidth and the increasing market presence of Ethernet interface protocols in the market. It is widely reported that Australian internet subscribers are increasing their online content use,<sup>9</sup> and there is continued growth in internet traffic driven by increased usage of higher bandwidth applications such as video-conferencing, streaming or downloading from a file-hosting site. The ACMA has stated that “[p]erformance improvements in Australian broadband networks are expected from the migration from an underlying range of transmission protocols to a native IP over Ethernet protocol and higher-speed broadband networks.”<sup>10</sup> ACMA further notes that “[u]sing native IP over Ethernet has the advantage of improving speed and bandwidth efficiency, reducing costs of deployment and operation and providing a more logical connectivity to IP core networks.”
- 3.4 It is Optus’ experience that Ethernet is rapidly replacing earlier standards. This can be measured through the number of orders of Ethernet products. For example, CiC Earlier non-Ethernet technologies are in the process of becoming obsolete. For example, CiC
- 3.5 Ethernet is growing in importance within the Asia pacific region. It has been reported that “[a]fter years of slow adoption outside Japan, Ethernet services are starting to penetrate enterprise wide area networks (WANs) throughout Asia.... Increased adoption in markets like Australia, India and China will help push the region’s enterprise Ethernet market up 8% to \$8.1 billion.”<sup>11</sup>
- 3.6 Arguably, Ethernet interface protocols may be considered to fall within the current DTCS service description. Given the current service description is expressed to include “higher orders” of bandwidth, it might be argued that Ethernet interface protocols are included by implication.
- 3.7 However, it could also be argued that Ethernet is excluded by implication, given that the lower orders of bandwidth listed in the description specifically refer to the PDH and SDH protocols. Optus considers that the current

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<sup>9</sup> ACMA, *Communications infrastructure and services availability in Australia 2008*, 2008, p.16

<sup>10</sup> ACMA, *Trends in communications and media technology, applications and use*, March 2009, p.3

<sup>11</sup> Asia Telecom, “Carrier Ethernet services primed for growth,” News Article, 10 August 2009, <http://www.telecomasia.net/content/carrier=ethernet-services-primed-growth?page=0%2C1> [accessed 25/1/10]

description is sufficiently unclear with regard to this point that the Commission's proposed variation is justified. It is also relevant to note that Telstra's current practise, in Optus' experience, is to refuse requests to supply transmission capacity services based on the Ethernet interface protocol at wholesale. Optus does not expect that Telstra will change this policy without a change to the service description. Consequently, Optus submits that the DTCS service description should be varied to specifically refer to Ethernet interface protocols as well as PDH and SDH.

### **Form of the proposed variation**

- 3.8 Regarding the form of the proposed variation, Optus considers that the setting of a minimum data rate of 2.048 Mbps is appropriate. However Optus considers that the calculation of bandwidth included within this definition may need to be further clarified, particularly with regard to the treatment of Ethernet services.
- 3.9 For example, with Ethernet point to point services the total service bandwidth provided between the sites may be different to the line interface at the customer connection point. In this scenario, a potential point of confusion may arise around the parts of the Ethernet frame considered for inclusion in the calculation of the bandwidth, that is, the entire frame (including for example header and address data) or just the payload within the Ethernet frame.
- 3.10 A second clarification may be required to address potential concerns surrounding Ethernet's application as both a physical medium and a value-added service over multiple layers in the Open Systems Interconnection (OSI) model.
- 3.11 Optus considers that the declaration is intended to cover point to point transmission services and that it be inappropriate for the declaration to be expanded to cover value-added services provided at higher levels such as point to multipoint and VPLS. These higher level services can be provided over the same basic network infrastructure, using as an input the declared point to point DTCS delivered over a layer 2 Ethernet interface.
- 3.12 If the proposed change only covers point to point services delivered over a layer 2 Ethernet interface, then this can be considered a clarification as the Commission suggests. However if this is not the case, then there is the potential for the proposed change to in effect broaden the scope of the service description. If there is considered to be a risk that the inclusion of Ethernet protocols into the DTCS service description may lead to double regulation, Optus considers that this can be mitigated by the inclusion of a clarifying statement in the service description.
- 3.13 Accordingly, Optus considers it would be appropriate for the Commission to specify that the inclusion of Ethernet interface protocols applies only to point to point services delivered over a Layer 2 Ethernet interface and *not* to multipoint, IP, VPLS and other higher level services. Optus proposes the service description be further modified to include (after the Commission's proposed definition *Ethernet, PDH or SDH interface protocols*) the following comment:

*For the avoidance of doubt, an Ethernet interface protocol in this context applies only to point-to-point services provided over a layer 2 Ethernet interface (where “layer 2” refers to the Open System Interconnection Reference Model).*

- 3.14 The current DTCS service description with proposed changes is set out in Appendix A.
- 3.15 Optus also supports the defining of interface protocols based on international standards, such as the ITU-T and IEEE, as this allows Australia to benefit from the economies of scale from technology being deployed in the global market.
- 3.16 To provide greater certainty, a clause may be added to clarify that where new protocols and interface standards are increasingly recognised by the ITU and IEEE, then they may be added to the service description from time to time as the technology, demand and competitive environment changes.



## 4. Legislative Criteria

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### Promotion of competition

- 4.1 Declaration promotes competition by ensuring that access seekers continue to be provided with the services they require to compete in downstream markets, where the market would otherwise not be competitive. Given that Ethernet has emerged as a key standard in the Australian transmission network, it will be increasingly necessary for access seekers to have the ability to offer Ethernet interface protocol-based services if they are to effectively compete. As noted above, Telstra's current practise, in Optus' experience, is to refuse requests to supply transmission capacity services based on the Ethernet interface protocol at wholesale. Optus does not expect that Telstra will change this policy without a change to the service description. Consequently, Optus considers that the Commission's proposed variation to the service description would promote competition in downstream markets.
- 4.2 Further, Optus considers that the introduction of Ethernet standards for carriage of internet protocol services has the potential to allow access seekers to use relatively cheaper equipment than that required for PDH and SDH standards, which would further facilitate competition in downstream markets.

### Efficient use of and investment in infrastructure

- 4.3 Optus considers the inclusion of Ethernet interface protocols in the service description will likely help to move the telecommunications industry towards even more widespread adoption of and investment in modern transmission technologies. It would support the general industry movement towards Ethernet as the native transmission protocol.
- 4.4 Given that Ethernet has emerged as a key standard in the Australian transmission network, its availability at wholesale will enable more advanced services to be provided by a greater number of carriers and stimulate greater service differentiation and product choice in the market. Accordingly, Optus considers that by ensuring that Ethernet interface protocols are not excluded from the DTCS service description, the Commission's proposed variation will encourage the efficient use of network infrastructure.
- 4.5 In markets that are not effectively competitive, declaration promotes efficient investment in alternative infrastructure by allowing entrants to build a customer base. As the Commission has recognised "*at some point in the future, when that carrier/CSP has secured a customer or its retail customer base reaches a certain threshold, it may be encouraged to invest in its own infrastructure due to the greater certainty of a return on investment.*"<sup>12</sup> Given that Ethernet has emerged as a key standard in the Australian transmission network, its availability at wholesale will enable a greater number of entrants to build a retail customer base. In turn, this will encourage such carriers to invest in their own infrastructure in the future.

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<sup>12</sup> ACCC, *Domestic transmission capacity service*, DTCS Declaration, Final Report, March 2009, p.31

Consequently, Optus considers that the Commission's proposed variation to the service description would encourage efficient investment in infrastructure.

- 4.6 Further, as discussed above, clarification may be required to specify whether the inclusion of Ethernet interface protocols applies only to point to point services or to both point to point *and* point to multipoint, VPLS and other higher-level services. Optus considers that a restriction of the service description to point to point services provided over a layer 2 Ethernet interface would encourage efficient investment in infrastructure. Provision of end-to-end service offerings beyond layer 2 is a point of differentiation for carriers and CSPs. Access to point to point links at layer 2 typically provides the underlying infrastructure from which network providers are able to value-add and provide services at higher levels such as point to multipoint, VPLS and other higher level services. Restriction of the service description to point to point services provided over a layer 2 Ethernet interface would encourage carriers to invest in their own infrastructure used to supply such value-added products.

## Appendix A: Current DTCS service description with proposed changes

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The domestic transmission capacity service is a service for the carriage of certain communications from one transmission point to another transmission point via network interfaces at a designated rate on a permanent basis by means of guided and/or unguided electromagnetic energy, except communications between:

- (a) one customer transmission point and another customer transmission point
- (b) a transmission point in an exempt capital city and a transmission point in another exempt capital city
- (c) one access seeker network location and another access seeker network location

### *Capital-regional routes*

- (d) a transmission point in Sydney and a transmission point in any of the following regional centres: Albury, Lismore, Newcastle, Grafton, Wollongong, Taree, Dubbo and, with effect from 25 November 2009, Campbelltown, Gosford, Coffs Harbour and Goulburn
- (e) a transmission point in Melbourne and a transmission point in any of the following regional centres: Ballarat, Bendigo, Geelong and Shepparton
- (f) a transmission point in Brisbane and a transmission point in any of the following regional centres: Toowoomba, Gold Coast and, with effect from 25 November 2009, Townsville, Rockhampton, Bundaberg and Maryborough
- (g) a transmission point in Adelaide and a transmission point in Murray Bridge and, with effect from 25 November 2009, Port Augusta

### *Inter-exchange transmission (metropolitan areas)*

- (h) with effect from 25 November 2009, inter-exchange transmission for the following metropolitan ESAs:
  - (1) in Sydney between transmission points located at an Exchange in any of the following ESAs: Ashfield, Balgowlah, Bankstown, Blacktown, Burwood, Campsie, Carramar, Castle Hill, Chatswood, Coogee, Cremorne, East, Eastwood, Edgecliff, Epping, Glebe, Granville, Harbord, Homebush, Hornsby, Hurstville, Kensington, Kingsgrove, Kogarah, Lakemba, Lane Cove, Lidcombe, Liverpool, Mascot, Mosman, Newtown, North Parramatta, North Ryde, North Sydney, Parramatta, Pendle Hill, Pennant Hills, Petersham, Randwick, Redfern, Revesby, Rockdale Rydalmere, Ryde, Seven Hills, Silverwater, St Leonards, Undercliffe, Waverley.
  - (2) in Brisbane between transmission points located at an Exchange in any of the following ESAs: Paddington, South Brisbane, Toowong, Valley, Woolloongabba.
  - (3) in Melbourne between transmission points located at an Exchange in any of the following ESAs: Ascot, Brunswick, Caulfield, Coburg, Elsternwick,

Footscray, Heidelberg, Malvern, Moreland, North Melbourne, Port Melbourne, Preston, Richmond, South Melbourne, St Kilda, Toorak

- (4) in Perth between transmission points located at an Exchange in the ESAs South Perth and Subiaco

*Inter-exchange transmission (CBD areas)*

- (i) with effect from 25 November 2009, inter-exchange transmission for the following CBD ESAs:
  - (1) in Sydney between transmission points located at an Exchange in any of the following ESAs: City South, Dalley, Haymarket, Kent and Pitt.
  - (2) in Brisbane between transmission points located at an Exchange in any of the following ESAs: Charlotte, Edison and Spring Hill.
  - (3) in Adelaide between transmission points located at an Exchange in any of the following ESAs: Flinders and Waymouth.
  - (4) in Melbourne between transmission points located at an Exchange in any of the following ESAs: Batman, Exhibition and Lonsdale.
  - (5) in Perth between transmission points located at an Exchange in the ESAs Bulwer, Pier and Wellington.
  - (6) in Sydney between transmission points located at an Exchange in
    - ii. any of the following ESAs: City South, Dalley, Haymarket, Kent and Pitt; and
    - iii. any of the Sydney Metro Exemption ESAs
  - (7) in Brisbane between transmission points located at an Exchange in
    - iv. any of the following ESAs: Charlotte, Edison and Spring Hill; and
    - iv. any of the Brisbane Metro Exemption ESAs
  - (8) in Melbourne between transmission points located at an Exchange in
    - v. any of the following ESAs: Batman, Exhibition and Lonsdale; and
    - vi. any of the Melbourne Metro Exemption ESAs.
  - (9) in Perth between transmission points located at an Exchange in
    - vii. any of the following ESAs: Bulwer, Pier and Wellington; and
    - viii. any of the Perth Metro Exemption ESAs.

## Definitions

Where words or phrases used in this Annexure are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning as given in the relevant Act.

In this appendix:

an **access seeker network location** is a point in a network operated by a service provider that is not a point of interconnection or a customer transmission point

an **exempt capital city** means Adelaide, Brisbane, Canberra, Melbourne, Perth or Sydney

a **customer transmission point** is a point located at customer equipment at a service provider's customer's premises in Australia (for the avoidance of doubt, a customer in this context may be another service provider)

~~a **designated rate** is a transmission rate of 2.048 Megabits per second, 4.096 Megabits per second, 6.144 Megabits per second, 8.192 Megabits per second, 34 to 35 Megabits per second, 140/155 Megabits per second (or higher orders)~~

a **designated rate** is a transmission rate of 2.048 Megabits per second or higher using Ethernet, PDH or SDH interface protocols.

**Ethernet, PDH or SDH interface protocols** are Ethernet, Plesiochronous Digital Hierarchy (PDH) or Synchronous Digital Hierarchy (SDH) interface protocols as established and amended from time to time by the International Telecommunications Standardisation Sector (ITU-T) or the Institute of Electrical and Electronic Engineers (IEEE) *(the Commission's "proposed changes")* For the avoidance of doubt, an Ethernet interface protocol in this context applies only to point-to-point services provided over a layer 2 Ethernet interface (where "layer 2" refers to the Open System Interconnection Reference Model). *(Optus' "proposed inclusion")*

**exchange** means a telecommunications exchange and includes the land, buildings and facilities (within the meaning of section 7 of the *Telecommunications Act 1997* (Cth)) that comprise or form part of the exchange.

**exchange service area** or **ESA** has the meaning given to that phrase by the Australian Communications Industry Forum Limited definition in ACIF C559:2006, Part 1.

a **point of interconnection** is a physical point of interconnection in Australia between a network operated by a carrier or a carriage service provider and another network operated by a service provider

a **transmission point** is any of the following:

- a) a point of interconnection
- b) a customer transmission point
- c) an access seeker network location.